



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,640	06/20/2006	Koen De Keersmaecker	IMEC320.001APC	3620

20995	7590	02/22/2010
KNOBBE MARTENS OLSON & BEAR LLP		
2040 MAIN STREET		
FOURTEENTH FLOOR		
IRVINE, CA 92614		

EXAMINER	
SAKELARIS, SALLY A	

ART UNIT	PAPER NUMBER
1797	

NOTIFICATION DATE	DELIVERY MODE
02/22/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
eOAPilot@kmob.com

Office Action Summary	Application No. 10/583,640	Applicant(s) KEERSMAECKER ET AL.	
	Examiner Sally A. Sakelaris	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-40 is/are pending in the application.
- 4a) Of the above claim(s) 33,34 and 36-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-32 and 35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/20/2006 & 9/25/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I claims 21-32, in the reply filed on 12/3/2009 is acknowledged.

Claims 1-20 have been cancelled and claims 33-40 have been amended to include the limitation of the product claims but have been withdrawn. Claims 21-32 are pending and are under examination.

In light of applicant's amendment to the presently withdrawn claims it should be noted that a new lack of unity requirement exists and has been provided below. Due to applicant's amendments, claim 35 has now been included in group I along with claims 21-32 and is examined herein.

Election/Restrictions

Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 21-32 and 35, drawn to a sensing device comprising a micro-electronically addressable sensor surface and a method of using this sensing device classified in for example, Class 422 subclass 82.02 and Class 436 subclass 518.

Group II, claim(s) 33, 34, and 36-40, drawn to a method of depositing a pattern of molecules on to the surface of a sensor classified in for example, Class 427 subclass 58.

1. The inventions listed as Groups I-II lack unity of a sensing device comprising a micro-electronically addressable sensor surface, the sensor surface comprising a recognition molecule and an activation element selected from the group consisting of an individually addressable

Art Unit: 1797

thermal activation element and an individually addressable electrochemical activation element is configured to activate the sensor surface, wherein the recognition molecule is covalently bound to the sensor surface, and wherein the sensor is configured to electrically detect or electrically sense a specific binding between the recognition molecule and an analyte, this technical feature is not a special technical feature as it does not make a contribution over the prior art in view of Yousaf et al.(PNAS, 2001).

Yousaf et al. teach a sensing device for sensing a specific binding between an analyte and a recognition molecule, the sensing device comprising: a sensor comprising a micro-electronically addressable sensor surface, the sensor surface comprising a recognition molecule (self-assembled monolayer (SAM) of alkanethiolates) and an activation element (i.e., electrical potential) which is a thermal activation element, wherein the activation element is configured to activate the sensor surface, wherein the recognition molecule (i.e., monolayer featured in Figure 2) is covalently bound to the sensor surface (i.e., Au and Sulfer of the monolayer), and wherein the sensor is capable of electrically detecting or electrically sensing a specific binding between the recognition molecule and an analyte.

The shared technical feature of Groups I-II above is therefore not a special technical feature as it does not make a contribution over the prior art.

Furthermore, Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). The method of making the sensing device of claim 21, as claimed in Group II could be used to make a different sensing device other than the one claimed that does not include a laser (recited in claim 39) as its activation element.

Restriction for examination purposes as indicated is proper because all these inventions listed in this action are independent or distinct for the reasons given above and there would be a serious search and examination burden if restriction were not required because one or more of the following reasons apply:

Art Unit: 1797

- (a) the inventions have acquired a separate status in the art in view of their different classification;
- (b) the inventions have acquired a separate status in the art due to their recognized divergent subject matter;
- (c) the inventions require a different field of search (for example, searching different classes/subclasses or electronic resources, or employing different search queries);
- (d) the prior art applicable to one invention would not likely be applicable to another invention;
- (e) the inventions are likely to raise different non-prior art issues under 35 U.S.C. 101 and/or 35 U.S.C. 112, first paragraph.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse. Traversal must be presented at the time of election in order to be considered timely. Failure to timely traverse the requirement will result in the loss of right to petition under 37 CFR 1.144. If claims are added after the election, applicant must indicate which of these claims are readable on the elected invention.

If claims are added after the election, applicant must indicate which of these claims are readable upon the elected invention.

Art Unit: 1797

Should applicant traverse on the ground that the inventions are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the inventions to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

2. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

3. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained.

Art Unit: 1797

Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 21-32 and 35 are rejected under 35 U.S.C. 102(b) as being anticipated by Yousaf et al.(PNAS, 2001).

With regard to claim 21, Yousaf et al. teach a sensing device for sensing a specific binding between an analyte and a recognition molecule, the sensing device comprising: a sensor comprising a micro-electronically addressable sensor surface, the sensor surface comprising a recognition molecule (self-assembled monolayer (SAM) of alkanethiolates) and an activation element (i.e., electrical potential) which is a thermal activation element, wherein the activation element is configured to activate the sensor surface, wherein the recognition molecule (i.e., monolayer featured in Figure 2) is covalently bound to the sensor surface (i.e., Au and Sulfur of

Art Unit: 1797

the monolayer), and wherein the sensor is capable of electrically detecting or electrically sensing a specific binding between the recognition molecule and an analyte.

With regard to claim 22, a cyclic voltammetry was performed with a Bio-analytical Systems (CV-50 potentiostat by using the gold/SAM as the working electrode, platinum wire as the counter electrode, and Ag/AgCl as the reference electrode (Materials and Methods, Electrochemistry, Pg.5993).

With regard to claims 23 and 24, each of the plurality of micro-electronically addressable sensors are individually activatable and addressable (i.e., via application of electrical potential and subsequent Diels Alder mediated immobilization of peptide on right of Figure 2).

With regard to claims 25 and 26, the sensor surface includes a chemical molecule based, SAM anchoring layer (Figure 2) covalently bonded to the gold substrate.

With regard to claim 27, the SAM anchoring layer is activatable via an application of an electrical potential of 500mV (figure 2).

With regard to claims 28 and 29, the electric potential based activation element converts the once inert monolayer (SAM) to a monolayer presenting the corresponding quinine groups which ultimately results in their Diels-Alder mediated immobilization of peptides (Furthest right in Figure 2).

With regard to claim 30, the material is gold which is a transition metal.

With regard to claims 31 and 32, the thermal activation element is a potentiostat (CV-50) which includes a resistor.

With regard to claim 35, Yousaf et al. teach a method for sensing a binding event, the method comprising: providing a sensing device according to claim 21 as can be seen above,

Art Unit: 1797

activating the sensor surface; depositing a recognition molecule from a liquid phase or a vapor phase onto the sensor surface (see above rejection for claims 21-32); and detecting a binding event between the recognition molecule and an analyte (i.e., detection was measured by scanning electron micrograph and via fluorescence microscopy (Figures 3-5 page 5995)).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sally A. Sakelaris whose telephone number is 5712726297. The examiner can normally be reached on Monday-Friday 8-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 5712721267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Sally Sakelaris

/Jill Warden/

Supervisory Patent Examiner, Art Unit 1797

12/16/2009